

AVIATION

The Oldest American Aeronautical Magazine

AUGUST 31, 1925

Issued Weekly

PRICE 10 CENTS



The Italian Airship N2 in flight

VOLUME
XIX

SPECIAL FEATURES

ITALIAN AIRSHIP N2
THE FOKKER-KANSAS CITY COMPANY
WAR TIME ANTI-AIRCRAFT STATISTICS

NUMBER
9

GARDNER PUBLISHING CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 29, 1920, at the Post Office at Highland, N. Y.
under Act of March 3, 1879.

The Tribune of the Press.

At the August Air Race Meeting at Lympne

Aeroplanes fitted with

Bristol

CHERUB AIRCOOLED ENGINES

Won 5 out of 6 Races

In the remaining race "Bristol" Aeroplanes fitted with "Bristol" Aero Engines were 2nd and 3rd.

In the race for the Grosvenor Challenge Cup the 1st, 2nd, 3rd, 4th and 5th machines were fitted with "Bristol" Cherub Engines.

In the competitions for altitude and speed over a measured course aircraft with "Bristol" Cherub engines

WON 3 out of 4 EVENTS

and second place in the remaining event

*If you desire fuller details of the results
please write, or cable, us for them.*

THE BRISTOL AEROPLANE CO., Ltd.

Filton—Bristol—England

Order Bradleys, Western Union and A.B.C.

Cables—Aviation, Bristol

When Writing an Advertisement, Please Mention AVIATION

"MORE SWEEPING THAN 1924"

"It will be remembered that during last year's Light Aeroplane Competitions at Lympne the 'Bristol' Entries 'swept the board,' but the success that year are even more remarkable and they reflect very vividly the extraordinary reliability of the 'Bristol' made product compared with those emanating from other manufacturing centres." *

"The results of the Air Race Meeting at Lympne during the week-end were once again a complete triumph for 'Bristol' manufacture, and it was absolutely proved that amongst light aeroplanes no engine has as present day rival to the 'Bristol' Cherub."

From *Flight*

AUGUST 31, 1925

AVIATION

Published every Monday

CONTENTS

Editorials	337	Police Dept. Regulation of Aircraft	290
Senator Bragdon Reports on Government Aviation	338	War Department Anti-Aircraft Record	297
The Fokker-Kauper City Company	339	Aerial Fire Patrol on the National Forests	298
Description of the Goodyear Pilot	342	Race Notes	300
The Lorraine-Kerbs Metal Propeller	344	Airports and Airways	300
Weather Bureau Aeronautical Notes	345	United States Air Forces	304

GARDNER PUBLISHING COMPANY, Inc., Publishers

CENTRAL AND EDITORIAL ROOMS: 215 FOURTH AVENUE, NEW YORK

CABLE ADDRESS: AERIENS

Telephone Office

HIGHLAND, N. Y.

Subscription price: Four dollars per year, Canada, five dollars. Postage, no dollars. Single copies ten cents. Back numbers 25 cents. Copyright 1925, by the Gardner Publishing Company.

Issued every Monday. Forms close ten days previously. Entered as second-class matter, Nov. 22, 1925, at the Post Office of Highland, N. Y., under act of March 3, 1879.

WACOS READY FOR DELIVERY

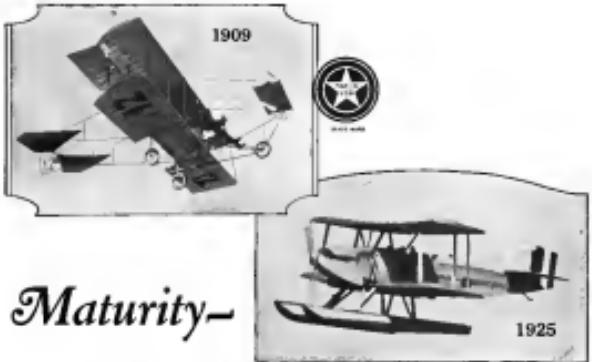


ANNOUNCING Distributing Agency for the

NEW WACO NINE

WACOS Ready for Delivery at Pine Valley, N. J. Flying Field

LUDINGTON EXHIBITION COMPANY
610 ATLANTIC BLDG., PHILADELPHIA, PA.



Maturity-

LEADERSHIP in an art is not to be attained over-night. An organization must grow and mature, must formulate ideals and then form the habit of making its performance match with those ideals.

The Glenn L. Martin Company organization is matured. With sixteen years of experience behind it, it functions smoothly, efficiently, accurately. There is teamwork without lost motion, continuous forward progress and unvarying dependability in its product.

The purchaser of a Martin plane is safeguarded by this maturity of experience.



Please Write to Advertising, Please Write to AVIATION

L. D. CARDINE
PRESIDENT
EARL D. CHAMBERS
Vice President
L. D. WINTER
Treasurer
GEORGE NEMIRE
Business Manager

DONALD W. McILMICKY
Editor
VIRGINIA E. CLARK
EDWARD P. WARREN
RALPH H. UPTON
EDWARD T. ALLEN
CONTRIBUTING EDITORS

AVIATION

VOL. XIX

AUGUST 31, 1925

Na. 9

The Anti-Aircraft Tests

WHILE the anti-aircraft tests have not yet been completed, but the heat of which has been to create in the mind of the public an impression of the fatality of anti-aircraft as a combat defense weapon. Whether or not this impression has been made by the newspaper accounts which have looked only to the high lights, the fleet reviews. As a result, the Coast Artillery officers who have worked long and hard to have stand against an enemy, probably feel rightly, that their "duty" contributions or otherwise have gone for naught or far as the public is concerned. When the public is given the average news that a "screed" has been hit a dozen times out of so many thousand shots, their emotional shell is not in the direction of the ground lost with the pilot who has saved the target through the field of fire.

It is recognized, everywhere, and nowhere better than in the Army, that strong measures have to be used to bring about changes in the military and naval mind. The old industry-military differences were carried on with a bitterness on the part of the industry, and a hostility by the cavalry that did not interest the public to the same extent that the air problem has caught the popular imagination. Instead of a controversy among leaders of one service, the anti-aircraft extension is upheld by the General Staff of the Army and the General Board of the Navy, while the opposition is disengaged by the Army personnel of both services, ideally in some quarter perhaps, but nevertheless with that confidence that arises from close to have as the result of their experiences. The extent to which the pessimists have gone is illustrated by the characterization of the tests as "hazardous stuff" by Colonel Mitchell and comparing the anti-aircraft shooting to "chasing birds on a lawn to get out of their tails" by Congressman La Guardia who flew several times alongside the flying plane so as to get a close-up view of the tests.

On the other side, bulletins are issued to the newspapers that state that "the flying plane while maneuvering at an average speed will fly straight for at least one-half mile of each course to an instant altitude and greatest speed so as to simulate bombing." Nothing is said about the position of the eye with respect to the target, and the possibility that would be taken advantage of, under actual service conditions. The altitude of the tests with the three inch gun has been about five thousand feet so that the gunners could see the target. What would happen at the normal bombing altitude under true service conditions is not stressed. In all fairness, however, it should be remembered that these tests are to be considered tests of accuracy of fire and dependability of ammunition and not a simulated service test. When, however, the impression is created that the conditions are those that would obtain in actual warfare the position is the same, the altitude and the variability should all be considered.

Similarly, General Sumnerall said, in speaking of the tests, "It cannot be admitted that an enemy's air force will find us helpless, in measures for ground defense." Hence, again, the impression is created that the Coast Artillery has made the tests with equipment that is available for use against the enemy as a field defense of the country. At Fort Tilden, there were two batches of five guns each. To defend or to make an enemy force coming through the air feel the effect of anti-aircraft, if they should make an attack on New York, a thousand or even more guns would be required to cover every air the enemy's remaining words. When the number of anti-aircraft guns and necessary stores of ammunition that would be required to create this condition for all cities or both coasts in total, the case becomes too large to consider, especially when Congress appears to be unconcerned by the destructions that fall.

The publicity of the tests reminds one of the bombing tests made with the battleship. At that time, the tests were conducted, and definitely stated to be, tests of accuracy of bombing and efficiency of bombs. But afterward came the Navy which made the statement that it took so many hours to sink a ship, and made direct comparison with the use taken to sink ships by gunnery at Jejufield. Similarly, in the present anti-aircraft tests, when the target was hit with a fragment of shrapnel, the attacking air force was required and when no hits were made the enemy plane was victorious. These statements are the result of trying to carry water on both shoulders; of calling the existing tests in one breath and then making remarks about aircraft conditions in the next. To those who have had the opportunity of observing the statements given out by the older services during the last few years, there has seemed to be an effort made in emphasis in success of anti-aircraft services and silence on achievements.

A particularly good illustration of the uncertainty of "anti-aircraft hits" was shown when one target was "hit down."Cheers went up from the ground forces and everybody was happy. There was a real demonstration that could actually be seen. But when the line was measured it was found that the hit had merely cut the towline with nearly-five feet in front of the target. This is in evidence of the poor neutron readings that usually come from the use of compressed gases.

That there has been a real development in anti-aircraft weapons should be welcomed by all. The Ordnance Department and the flying personnel of the Coast Artillery have shown that there are possibilities with ground defense, given a large appropriation to equip the country with the guns. Whether or not money should be spent on this sort of defense or applied directly to aircraft will be out of the debatable question resulting from these tests. With the results stated in these few light the Air Service has nothing to fear and should be glad that the tests have been made so they will show just what may be expected of this form of ground attack, should it be developed by an enemy.

Senator Bingham Reports on Government Aviation

Gives President Coolidge Recommendations for an Administration Aircraft Policy

Senator Elbert Bingham of Connecticut has spent several months on Congress, engaged in preparing and visiting both Air Service fields and several air stations. On Sept. 24, he visited President Coolidge at Swampscott and made suggestions to him to what government could do to aid the aeronautical development of the United States.

It is reported that President Coolidge approved a measure submitted to him by Federal aid to aeronautics, wherein, according to Senator Bingham, he has filed an order in White Court authorizing the use of Federal funds or aid to place the United States among the other nations in aeronautical progress.

Senator Bingham intends to present his recommendations to the Secretary of State, the Secretary of War, the Secretary of Commerce under the Department of Commerce, and for Federal aid along political and congressional lines, which the Senator, who was a Lieut. Col. in the Air Service during the war, will induce American support to his recommendations. He also plans through the establishment of air routes between the larger cities.

Mr. Bingham is a skilled writer. He says the American people will not support aadequate legislation. His plan creates a Bureau of Aeronautics in the Department of Commerce which is authorized to charter air routes, license aircraft, and do other things important to the Bureau of Navigation. That bureau would provide airports and facilities as need, such as the known now as the postal air service.

Airports Planned

Facilities to be given to commercial aviation would be in line with those furnished by the Federal Government for ocean navigation, with the exception of the airways and landing stations. It is estimated that these would not cost more than \$100,000,000. At present, as many as the states, Senator Bingham thinks, would cooperate with the Government in the creation of landing stations.

"The country has less confidence in anything, I think, than in what is beginning here," Senator Bingham said. "Personally, I would have some sort of safety that would place commercial aviation on a parity with established aviation abroad. I know that aeronauts here are opposed to that. Therefore my first recommendation is that the Federal Government not go in to offer the safety that the Federal Government can offer."

"We can send word to the western air lines and send word by the Federal Government. Legislation alone does not have a coastal right off. The building of airways and landing ways should come from Federal money. That is one thing that we can safely embark upon, a form of a directed subsidy. In Europe they give direct subsidies. I do not believe in direct subsidies."



Senator Elbert Bingham of Connecticut who is taking the leadership in Congress to interest a government air policy. He was a Lieut. Col. in the Air Service during the war. He supports the aeronautics areas in the Schools for Military Aeronautics and the Army Corps of Engineers. His book, "Aerodynamics by Air," his book, "The Aeromotor," was published in 1928.

Senators Bingham's plan creates a Bureau of Navigation in the Department of Commerce which is authorized to charter air routes, license aircraft, and do other things important to the Bureau of Navigation. That bureau would provide airports and facilities as need, such as the known now as the postal air service.

Airports Planned

Facilities to be given to commercial aviation would be in line with those furnished by the Federal Government for ocean navigation, with the exception of the airways and landing stations. It is estimated that these would not cost more than \$100,000,000. At present, as many as the states, Senator Bingham thinks, would cooperate with the Government in the creation of landing stations.

"The country has less confidence in anything, I think, than in what is beginning here," Senator Bingham said. "Personally, I would have some sort of safety that would place commercial aviation on a parity with established aviation abroad. I know that aeronauts here are opposed to that. Therefore my first recommendation is that the Federal Government not go in to offer the safety that the Federal Government can offer."

"We can send word to the western air lines and send word by the Federal Government. Legislation alone does not have a coastal right off. The building of airways and landing ways should come from Federal money. That is one thing that we can safely embark upon, a form of a directed subsidy. In Europe they give direct subsidies. I do not believe in direct subsidies."

The Reduction of Airplane Flight Test Data to Standard Atmospheric Conditions

N.A.C.A. Report No. 214

This paper was prepared for the National Advisory Committee on Aeronautics by Mr. W. E. R. Davies, D. S. Loring in order to supply the need of practical methods of reducing observed performance to standard conditions with a minimum of labor. The first part gives a very simple approximate method of reducing performance in climb, and a particularly adapted to work not requiring extreme accuracy. The second part gives a somewhat more elaborate and more accurate method of climb which is well suited to precise flight-test reduction. The third part gives a method of reducing the effect of specific air temperature and altitude on the performance of aircraft. An appendix gives working tables and charts for standard atmosphere.

Report No. 214 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

The Fokker-Kansas City Company

Fokker Plans to Become Resident of U.S.A. and Build Here

Anthony H. G. Fokker, airplane manufacturer of Amsterdam, Holland, visiting the leaders of the future development of commercial aviation in Europe and an account of the geographic and political boundaries less decided to nations to and become a reality in Europe. Mr. Fokker and his wife, Frank H. Fokker and George F. Davies of Ford, Bates & Davies of New York and Leopoldine Spitzer of New York, own and control the Atlantic Aircraft Corp. of Blackwood Heights, N. J. The Atlantic Aircraft Corp. is now engaged in manufacturing aircraft and metal forgings for the Air Service.

Mr. Fokker has written for extensive development of manufacturing facilities in the Atlantic Aircraft Corporation's plant in New Jersey. Mr. Fokker and his associates have definitely determined to construct a manufacturing plant at some favorable point over the center of the United States and begin the development and construction of commercial aircraft as either an extensive scale



The Fokker D.XXI Pursuit Plane which recently established new World Speed records with speeds of 238 and 309 m.p.h. The plane is equipped with a Nieuport engine.

Mr. Fokker and his associates have been induced to go to the United States to a country which provides for the formation of a new corporation to be known as the Fokker Aircraft Corporation. This company will locate its principal office and manufacturing plant in Kansas City, probably Kansas City investors participating in the financing up to the extent of 50 per cent of the total new financing required for the new corporation, amounting to a total of \$2,000,000.

An Underwriting Syndicate is being formed to provide \$10,000,000 or 30 per cent of the funds required for present financing.

The New Industries Committee of the Chamber of Commerce of Kansas City has made a request which fully outlines the plan of the new corporation, a syndicate giving complete information with reference to the organization and financing.

The subscription books have been opened and subscribers have been invited to invest in amounts not less than \$5,000 and not more than \$100,000 each. However this does not preclude the formation of syndicates of groups of individuals who desire to participate as a unit, in the amounts as given.

The underwriting prior to syndicate subscribers will be \$100 per block consisting of one share of preferred and participating and one share of common stock. Twenty-five per cent of the stock will be held by the Fokker and Davies and other investors, experts. The necessary organization of shares of stock and name giving by the Fokker commercial plane was clearly shown.

The Fokker Aircraft Corporation

The plan of the new corporation for the early establishment in Kansas City as its principal office and a factory for the development, assembly and production of airplanes and such parts as can be most advantageously manufactured in that location. This plant, together with the facilities at Blackwood Heights, N. J., will be in a position to supply the entire North American market. The new corporation will own the Atlantic Aircraft Corp., which has leased, with purchase option, a modern airplane factory, together with the adjacent 200 acre flying field on the Blackwood Meadows, six miles from Times Square, New York City, forming an ideal location for the New York plant. An efficient technical organization has been gathered together, including Mr. Fokker and his engineering associates.

corporation's present business includes contracts with the United States Government, upon which work is now being presented.

The new corporation will add 15,000 shares of preferred and participating stock and 20,000 shares of common stock for \$1,000,000 to expand the stock of the Kansas City plant of F. W. Fokker, the Dutch aviator, the proceeds of which will be used for the equipment of the Kansas City plant and for working capital in the development of this business in the commercial field.

With the remaining 4,000 shares of preferred and participating stock and 18,000 shares of common stock, there will be acquired by the new corporation the stock of the Fokker Flying Service, Inc., of New York, which stock was acquired by the Atlantic Aircraft Corporation, F. W. Fokker, the Fokker partner, Bertram, and agreements with Mr. Fokker and his Holland company.

Estimated Earnings

The development of the commercial field for the airplane in America is apparently at hand. It is the intention of the management to proceed conservatively in this development, offering gratis their services to the acquisition of the new corporations from time to time for payments upon their subscriptions, and to make a profit on the investment. It is the intention of the management to invest in the new corporation only such funds as are necessary to establish and maintain the plant until the industry has become established in the field. Based upon Mr. Fokker's European experience, this is a conservative and sage course to follow, and should be productive, eventually, of large profits.

Based upon the utilization of the proceeds of the acquisition of the new shares of preferred and participating stock and 20,000 shares of common stock, the Kansas City, New Jersey plants will produce annually one thousand planes of the various types under consideration, from which, when the market is developed, the net profits should average not less than \$500 each, or total annual net earnings of \$500,000 when so used as to produce a profit on the investment.

The management of the new corporation will consist of Mr. Fokker and his retained associates who will have the active cooperation of the new Board of Directors which will be composed of prominent bankers, industrial managers and engineers of Kansas City, Chicago and New York.

In order to insure a minimum of the investment, the stockholders will be entitled to receive a dividend on the corporation will be deposited in a cash fund for a period of five years from the date of its incorporation, of which the stock trustees will be Arthur H. G. Fokker, Joseph F. Parker of Kansas City, and Fred R. Ford of New York, as their nominees. The common stock will be deposited with the New England National Bank and Trust Company, of Boston, Massachusetts, a deposit which will be used for the payment of certain dividends thereon. Mr. Fokker will be granted an option for five years from the date of incorporation of the new corporation to purchase 5,000 shares of common stock, being one-third of the common stock sold with this new class of preferred and participating stock at \$100 per share, the proceeds thereof to belong to the subscriber.

The statement of the Committee acting for the Kansas City Syndicate gives many interesting facts as the result of their investigation. In brief, it is as follows:

At the present time there are approximately ten companies in the United States engaged in the manufacture of airplanes, all of which have been started during the past two years. New work. With the exception of one or two small concerns, all the plants are located on or near both east and west coasts, or near the Canadian border. There are a few other concerns of minor importance attempting the manufacture of airplanes.

Until recently, the development of aircraft in America has been in the governmental process. But there are many small commercial transportation companies and a few very large ones being developed throughout the United States. Furthermore, the government has demonstrated our mail gods are here to stay and extensive development along such lines is expected in the near future. The development of aeronautic flying fields and small air taxi concerns is rapidly converting a great potential market into an actuality.

The following are the market possibilities for efficient, well-constructed aircraft:

1. Various commercial air and transportation routes being established and developed.
2. Air mail routes to be operated by the United States government.
3. Air Mail routes to be operated by private established air transportation companies.
4. Private use by firms and individuals requiring rapid transportation.
5. The many hundred air taxi transportation companies.
6. Mail and express.
7. Shorter routes which is now absolutely open and ripe for development.



Arthur H. G. Fokker

Five hundred commercial planes are being used in regular aeronautic air transportation service in Europe. Based upon the same respective possibilities, the United States alone would require immediately 5,000 planes at a cost of \$100,000,000. The development of aeronautic air transportation in Europe is ahead of the United States.

The New York-San Francisco air Mail Route, which operates one ship in each direction 24 hours, requires one ship for every fifty miles of mail route, or a total of fifty ships.

On the same basis, the proposed air mail routes covering 25,000 miles, would require 500 ships costing \$10,000,000 which would have to be replaced annually.

The near future development is, in fact, this: the above-mentioned ultimate development of the commercial plane will mark the point where there will be in use for each 5,000 population as an average an aircraft as yet not in existence. Should this saturation point be attained, 100,000 units of various kinds would be required, which will soon be over and available for replacements. No markets will exist for the use of 100,000 ships at this time, nor will be the case for the use of 100,000 ships at this time.

General Plans of New Corporation

Granted, it is Mr. Fokker's plan to establish the principal manufacturing plant in the vicinity of the United States and proceed to develop as rapidly as possible commercial craft suitable to the uses in the United States and also to foster and assist in building up the various transportation companies for the use of services. His purpose is to undertake only such government work as may be profitable to the corporation.

Location

The establishment of the principal manufacturing plant in Kansas City is considered to be the only feasible in comparison with other localities, for the following reasons:

1. Greater security in time of war than every airport.
2. Natural possibilities for locating aeronautic commercial air transportation routes in all directions, radiating from Kansas City.
3. Close proximity to the many proposed air mail routes and aeronautic transportation routes being planned for the near future.
4. Exceptionally favorable labor conditions and a good supply of trained bookbinding and metal mechanics needed in aircraft production.
5. Geographic conditions favorable to the development of flying.

Management

The management of the company will be in the hands of Mr. Fokker and his associates, who are experts in industrial development and operation in the United States, and it is believed and expected that with a production of 300 to 500 planes annually, or over, that the company can be operated at a profit.

Mr. Fokker has decided to devote definitely from Amsterdam, Holland, to the United States. He would be desirous of his time, energy and ability in America. He was deeply and sincerely fascinated by the possibilities of this country when he became acquainted with them. It is his desire to become an American citizen as soon as possible.



The latest Fokker observation plane the CS

Mr. Fokker's close cooperation with, and assistance in the development of commercial airlines in Europe give him a most valuable experience in the manufacture and development of the industry in the country. Impressed with the general geographical and political limitations of Holland and Europe in general, he has great possibilities in the United States where such limitations are non-existent.

Purpose of Stock Issue

The \$100,000 cash received by the company will be used for the following purposes:

1. The establishment of a plant in Kansas City for the design, manufacture and marketing of aircraft suitable to conditions in North America.

2. The purchase of engines and other stock necessary for the production of a number of airplanes of different types

for which there is an existing and increasing demand for the preparation for economical quantity production and for a limited extent for participation in the development of aeronautic transportation. In this connection, it is proposed to import one twin engined and a few single engined large passenger carrying commercial planes from Mr. Fokker's Holland plant which will be used simultaneously for demonstration purposes and to serve as models for the proposed production to this country.

3. The improvement of the flying field and plant at Hartsfield, Georgia, N. J., as an important air terminal and repair station.

4. The perfection of a sales organization and strong field personnel necessary for the proper development of the airplane industry.



The CS, a testing plane constructed by the Fokker company of Holland.

The detailed operation program and the use of the money supported over the next twelve months has been studied by the committee. Purchases are made that of the rapid development of the business which Mr. Fokker foresees does not come up to expectations the rate of the expenditures are determined by the time it takes to accumulate capital and a sufficient amount to start in, if necessary, several years of vigorous development that is expected but also to meet certain requirements of immediate expansion if conditions warrant it is the very best future. Mr. Fokker is unwilling to make commitments with reference to the possibilities in America because the time and magnitude of it is extremely difficult to estimate that the time the expenditure of the capital is also certain and the facilities provided themselves, the Kansas City-New Jersey plants can very easily manufacture annually 1,000 planes varying from the average single motor to the large aircraft type, and that the best profits on these planes should average not less than \$500 each. This would yield an annual profit of \$500,000.00 and that production should be reached in five or ten years time.

Horatio Barber Returns

Horatio Barber, President of Barber & Baldwin, Inc., American Underwriters and Aeronautical Engineers, of 30 East 42nd Street, N. Y., sailed from Southampton, on the "Riviera" on Aug. 15, and returned to his office on the 21st. Horatio Barber & Baldwin, Inc., established a branch office last year at 31, London Street, London, England, and it is reported that the company's interests are steadily increasing.

First Mapping Service

An aerial map of Arthur Elk was put on exhibition July 29 at the Port Authority office at 11 Broadway, during the hearings on the proposed construction of the bridges to connect Staten Island and the Jersey mainland. This map was made in the record time of fourteen hours from the fact that the negatives were delivered to the laboratory of the First Photo Service, Inc., 279 West 31st St., New York.

The original aerial photograph was taken by Captain A. O. Russell is a camera plane piloted by E. P. Lott. Twenty exposures were made at exactly noon and hourly more at 2 p. m. The plane then returned to the base at Garden City, L. I. and the negatives were rushed to New York.

Description of the Goodyear Pilgrim

By H. T. KRAFT

Chief Accountant Examiner, The GoodYear Tire & Rubber Co.

The general layout of The Palgum device considerably simplifies the task of assessing system design, the principal design elements being the main computer, and the instruction and file storage. The chip has some characteristics of a semi-rigid which allow it to be housed in the housing of a micro-processor without serious deformation of the lead, and thereby considerably reduces failure chances and the cost of logic definition.

Knot Weight Only 30 Pounds

The hood is a conical-shaped girder of triangular section, tapering at the ends and 21 ft long. The total weight is 26 t and is based on the inside of the envelope before the ship is underway. It is rendered removable and foldable facilities are offered for this purpose. The hood is supported by a central mast and is attached to the top of the envelope and there spaced out to be longitudinal extensions. The mast is the ship structure practically a circular cross section at all times except for a slight indentation at the point of attachment at the top of the envelope. The mast is 100 ft long and 10 in. in diameter and is stiffened with very strong longitudinal stiffeners. The mast is very strong and has no difficulty of perfect adjustment of being able to instantly disassemble.

At the rear of the car there is a steel "wheeban" which fastens to the lead at the center of gravity of the engine. This wheeban acts primarily as a longer arm to reduce the effect of the fore-aft reaction of the engine. The engine is mounted to a combustion rubber and fabric base which is fastened to the car, eliminating any direct mechanical connection between the power plant and the car. The upper and lower shock absorbers are also fitted with flexible material to dampen the vibrations of the engine. The propeller is a two-blade four-foot diameter at the point of attachment to the car. A four-blade propeller with spinner is used which gives a higher efficiency than the two-blade type. The propeller weighs 32 lb.

The entire car is constructed of steel tubing of 0.035 in. wall 3½ in. diameter. The car is covered with 0.02 in. magnesium sheeting with water base galvanized cellulose windows of heavy glass. One section of the car was given a 5,000 lb. static load before it failed, which indicates that the car is very light and strong and will withstand severe loading shocks. The motor of the car is suspended in three rubber washers with no heavy finished seat below the motor. Seats are provided for one pilot, two passengers and a small pet at the rear for the motor machine.

Power Plant Arrangements

The fuel system consists of a Stewart Warner tank which seats satisfactorily on a small range of this horsepower. The engine is a 60 hp. Wright Model L (L-4). This engine is radial and has a constant shape exhaust manifold leading the exhaust down to a muffler which considerably reduces the exhaust noise. The instruments and controls are conveniently located or housed ahead of the pilot with throttle and spark control arranged on the left side of the pilot seat. The radial engine is provided in the standard form for normal control, with the engine at the right side of the pilot's seat for normal control.

The envelope has a capacity of 50,000 cu. ft. of helium gas and has an aspect ratio of 3.6 to 1. Two valves are provided, one for discharging gas in extreme emergencies and the other for helium control. During all general flight conditions there should be no cause for solving helium in view of the great unsatisfactoriness of the stage dynamics.

The nose cone construction is a rather radical departure from the usual design. The structure consists of a tube 18 ft long, 3.8 in. in diameter at 0.03 in. wall and has six radiating

Aug. 21, 1855.

AVIATION

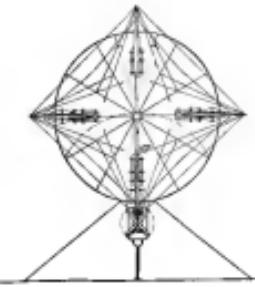
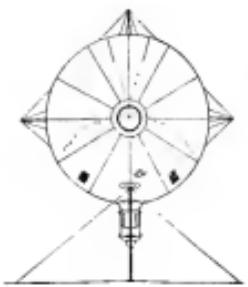
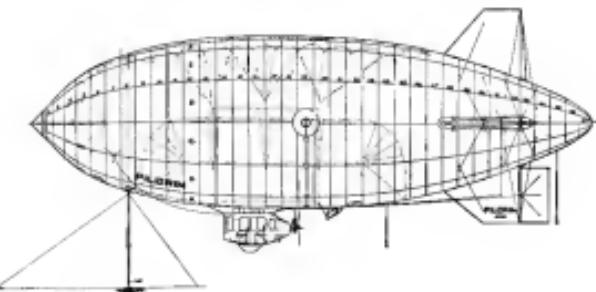
Curtiss Company Host to Racers

Assessment has just been made that visiting Army and
air force officers and civilian pilots who take part in the 1950
Winter Shows at Mitchel Field, L. I., will be supplied with
lodging through the courtesy of the Curtiss Company.
During the meet, all contestants who wish to take advantage
of the offer will be taken care of in the second and third floors
of the spacious building of the company at their leisure
and convenience.

will be staged in Army and Navy officers and civilian pilots and shower, cots and other facilities are promised. The restaurant at the factory will be open at all hours during the races and a bus service will be on a half hourly schedule from Mitchel Field with the Curtiss Plant.

desiring to avail themselves of these accommodations, apply to C. S. Jones of the Carlton Company at Gardner, I., or the offices of the New York 1925 Air Races, 30 East 4th Street, N. Y. Reservations should be made in advance so that the necessary arrangements can be made.

Measure	Value	Unit	Value	Unit
Stress	1000	psi	4500	psi
Fracture stress	1000	psi	200	psi
Fracture strain	0.005		0.005	
Modulus	1000	psi	4500	psi
LEFT AND WEIGHT MEASURES				
Mass (kg) (including) 90.10 10000 kg → 201570	201570	kg	201570	kg
Mass (kg) (empty) 90.10 10000 kg → 181570	181570	kg	181570	kg
Cat dead weight	0.000	kg	0.000	kg
Water weight	0.000	kg	0.000	kg
Total load per cent of initial RS	100.00	%	100.00	%
PERCENTAGE OF CHARGE, MASS				
Flame	300	lb	300	lb
Propane	300	lb	300	lb
Hydrogen	300	lb	300	lb
Ammonia (12)	300	lb	300	lb
Ammonium	300	lb	300	lb
Water added	300	lb	300	lb
THE				
PERFORMANCE DATA				
			Full power	Full power
Fuel load and consumption—kg/hr	0.000	kg/hr	0.000	kg/hr
Fuel load and consumption—lb/hr	0.000	lb/hr	0.000	lb/hr
Fuel load and consumption—kg/min	0.000	kg/min	0.000	kg/min
Fuel load and consumption—lb/min	0.000	lb/min	0.000	lb/min
Range—miles	0.000		0.000	
Range—km	0.000		0.000	
Range—miles	0.000		0.000	
Range—km	0.000		0.000	
Time to reach if mission is interrupted for water ballast	0.000		0.000	



The Leitner-Watts Metal Propeller

Uses Separate Hollow Steel Blades Set in Adjustable Hub

The British Royal Air Force have lately adopted the Leitner-Watts metal propeller as its standard "Propeller" list, as a standard service propeller. This propeller is no new invention, but the result of ten years work and research by Henry Leitner, M.I.E.E., and Dr. Watt, D.Sc., Assoc. M. Inst. C.E., F.R.A.S., and an expenditure of over a quarter-million dollars on laboratory and other development experiments.

Blades Are Separate

The above mentioned company has recently been formed, with the Master of Eltham as its chairman, to fill orders for the L-W propeller both for the British government and most of the leading aircraft construction manufacturers in Great Britain. For this purpose an extensive factory covering two and three-quarter acres of land has been acquired and equipped at Croydon, with a capacity of 200 blades per week, apart from those for the Royal Air Force.

One of the most important advantages of the L-W propeller is that it is not an integral propeller, but has interchangeable blades fitting in two way, three way or four way hubs, according to the number of blades for the particular propeller being used for greater angles or moments. While integral propellers are built in blocks, the L-W propeller hub can be assembled, but in the case of the L-W propeller that is enabled owing to its interchangeability in the fitting into the hub socket of a fresh blade from store, for all blades of the same size are made interchangeable, having a common standard of balance.

Some of the advantages of metal over wood may be increased, such as immunity from electric condensation, no water and spray the latter both being treacherous elements for wooden propellers and can cause work.

The material used in the construction of the L-W propeller is superalloyed mild steel sheet, but for certain specific uses where small diameter, high speed tips are needed, a light aluminum alloy is used. It is the opinion of the Leitner-Watts Propeller, Ltd., see of present manufacturers, as far as the British Air Ministry for standard blades, and it should be noted that unlike similar products by other firms, these blades possess the same interchangeability as those made in steel and in fact fit into the identical steel hub. The necessary taper in thickness for the steel blades is obtained by using laminated construction, which also tends to damp out vibration.

Blade Angle Adjusted at Hub

The blades can be adjusted in the hub separately through a wide range of pitch, which enables the propeller on any multi-bladed engine to obtain a maximum with the maximum efficiency. The pitch is indicated by a scale on the hub and a marked datum line on the hub to mark from. The blade root, or hub, is so constructed that it is impossible, under stresses, to swing even with extreme peripheral speeds which may occur near the hub, for the blade to be torn out of the control hub.

The steel blades are made up from forgings in two halves and carry the Hubco starter, disc, and gear case forged solid for the Centostaticus supercharger gear. Several engine makers in England, including Marconi, Rolls-Royce, Marconi-D. S. & S., Sunbeam, and Morris, The Royal Aeroplane Co., Ltd., are now making the L-W hub under license, or otherwise, a hub of their own construction to take L-W blades, brought in with the engine and thus materially reducing the expense and cost of the propeller.

The length of life of the steel propeller has been found only to be limited by the durability of the steel. Used by the British Admirals as an auxiliary service, one of the L-W propellers flew a distance equivalent to three times around the world. At the end of this distance the propeller was sub-

ject to an expert examination and was found to be in perfect condition throughout.



A M. test L-W metal propeller on the test stand.

Welded construction the steel gives ample warning of fatigue, minute cracks extending upward from the outer毅 ring being the first sign, and after these small cracks at first appear it has been found that the propeller is perfectly safe in the fact that the metal has been strengthened by every precaution. It will thus be seen that such light alloy construction, in which the propeller is going to feel it is liable to an instantaneous burst, the steel gives such warning that a pilot is enabled to complete his journey, however long that may be, in perfect safety.

Another important advantage, the Army Airforce commercial freight and passenger carrier, which is fitted with the Rolls-Royce Condor engine and in now flying on the Imperial Airways London to Paris line, is using the L-W steel propeller blades fitted into a hub made by Marconi-Rolls-Royce, Ltd., especially for these blades.

Aircraft firms in England are now fitting their propellers the variable pitch propeller with the above advantages, particularly for high altitude work, and at the present time Metal Propeller, Ltd., are working on blades for several aircraft construction firms, which are expected to be fitted into their experimental variable pitch hubs.

Because that company's work has up to date developed the most complete propeller, particularly the Henry Leitner, M.I.E.E., the technical director of Metal Propeller, Ltd., has invented an automatically variable pitch hub, which in its functioning is as simple as at first sight to seem obvious. There is no machinery, no gear wheels or levers and cranks as in this invention, but by virtue of harnessing aerodynamic force and tension, and utilizing their resultant force, the pitch of the propeller is automatically varied and very easily managed.

The propeller, now being produced on full scale, has been much praised by the Air Ministry who have placed an order for some experimental propellers.

Metal Propeller, Ltd., have already initiated an international organization, the object of which is to further the interests of aircraft manufacturers in the world, and to assist other nations of the world, including the United States, that L-W propellers and hubs, the various parts and design of which are protected by patents, throughout the globe can be produced for these markets.

It is believed that there has as yet been increasing need for the production throughout the world of this steel propeller, and it is expected that arrangements for their manufacture at a large scale may be completed in the near future.

Miles Deadlier than Planes

Despite newspaper reports to the contrary, airplane accidents are few in number than those due to other causes. Speaking before a conference of aeronautical and business officials at the Ford Airport, Dearborn, Mich., Brig. Gen. B. W. Schreuder, A.S.A., U.S.A., former chief test pilot of the Army Air Service at McCook Field, recently said:

"A plane is a machine, managed by a man, and a man, like a horse, is liable to error. I have noted that during a recent eight years, lost lives in the entire United States while engaged in civilian flying, while during the same years, in the State of Missouri alone, 80 persons—just ten times as many—were killed to death by auto."

Spud Carries' Construction

An effort is being made by the Navy Department to speed up the construction of the aircraft carrier U.S.S. Saratoga and Lexington. Encouragement has been given the surface

men in the Navy Department by the Director of the Budget, who, as he has announced, will approve larger appropriations for the Air Service, than were made by Congress last year. The department is anxious to have both of these large ships in commission at as early a date as possible, and additional funds will make this possible.

The Saratoga, which was launched this spring under the regular schedule, should be placed in commission in October. The early return of the Lexington is not believed that this date can be advanced. The Lexington will be launched about the same time, but will be further advanced than her sister ship.

Weather Bureau Aeronautical Movies

Two new motion pictures, just released by the United States Department of Agriculture there is over 1000 hours of aeronautical observation work that is being conducted by the Weather Bureau, and one of them gives especially a fine review of important American aeronautical activities.

The first film, "Exploring the Upper Air," is one and one-half hours in a popular manner with the novelty of upper-air observation work. It depicts flights by Weather Bureau balloons in a simple, logical, lucid, lucid, and brief manner, the study of which is considered of great value for students of meteorology.

"It is believed that there has as yet been increasing need for the production throughout the world of this steel propeller, and it is expected that arrangements for their manufacture at a large scale may be completed in the near future.

The second film, "Watching the Weather Above," is two and one-half hours in length. It shows the daily work of making upper-air observations at the Weather Bureau stations of large cities, and "small" balloon, the activities of the information of three former meteoric stations, San Francisco, Chicago, and Washington—and the distribution of "flying weather" forecasts from these centers to the various aeronautical areas into which the United States is divided. But best film shows the need for the forecast by means of a measurement of pressure which connects a pressure and a temperature, and "small" balloon.

"A film on a new program in meteoric photography is in the making, and it is expected that it will be shown in the fall of 1936. I have noted that during a recent eight years, lost lives in the entire United States while engaged in civilian flying, while during the same years, in the State of Missouri alone, 80 persons—just ten times as many—were killed to death by auto."

The film will be circulated through the aeronautical division of the Department of Agriculture and the corresponding State institutions. Copies may be borrowed for limited periods, or complete new sets may be purchased by authorized institutions at the manufacturing charge.

Officers of Consolidated Aircraft Corp. of Buffalo with Air Service Visitors



Left to right: George Newman, factory manager; Roy P. Whistler, chief inspector; Thomas Keen, works foreman; V. E. Clothier, vice president and chief engineer; R. M. Fink, president and general manager; J. L. Kelly, pressroom manager; Capt. R. B. Wolfe, Brooks Field; Capt. Col. A. Clegg, Wilber Wright Field; and Major Ralph Rojas, commanding officer, Brooks Field.

PILOTS!

No "Verboten" Signs at this Show

America's first Commercial Reliability Tour for the Ford Trophy starts from Detroit September 28th; covers 10 cities and finishes at Detroit October 3rd.

This is strictly a Commercial Show.

All aviators will have free run of the field and the Aircraft and Accessory Manufacturers' Exposition which will be held at the same time.

Your ship will be at your disposal, and gas and oil will be available at all times.

Program includes night shows; a \$2,500 balloon race; jumping balloons and continuous flying.

At the Aircraft Exposition, held on the field, you will be in touch with every company making airplanes and accessories. The next time you need ships, parts, instruments or clothing, you will know where to purchase them.

The public will be admitted to the field without charge.

You are cordially invited. No parking charge will be made for your ship.

DETROIT AVIATION SOCIETY
and
DETROIT BOARD OF COMMERCE
Detroit, Michigan

Please Write to Advertisers, Please Mention AVIATION

To Manufacturers of Aircraft and Accessories

OFFICERS
Henry D. Smith, President
William E. Moore, Vice-President
John C. Murphy, Past Vice-President
Floyd Rice, President
Harold S. Corlett, Vice-President
William C. Murphy, Past Vice-President
Charles T. Ross, Treasurer
George B. Farnham, Secretary
Robert W. Smith, Assistant Secretary

DIRECTORS
Wendell W. Allen
Albert E. Baker
George H. Cannon
George H. Clegg
W. H. Dwyer, Jr.
Dr. James E. Farnham
Dr. Jason Miller
John W. Murphy
George P. Murphy
William E. Moore
Robert D. Smith
Robert D. Wallace

AIRPLANE TOUR
Harold S. Corlett, Chairman
Administrative
Secretary
Detroit Aviation Society
Detroit Board of Commerce
Detroit Chamber of Commerce
Detroit Board of Trade
Detroit Flying Club
Detroit Air Races
Detroit Chamber of Commerce
William S. Moore
Farnham
Charles T. Ross
Farnham
Harold H. Farnham
Farnham
W. H. Dwyer
Farnham
George P. Murphy
Farnham
Robert D. Smith
Farnham
Robert D. Wallace

You are invited to exhibit your products at the first Annual Aero Exposition, at the Ford Airport which will be held in connection with America's first Commercial Airplane Reliability Tour for the Ford Trophy, September 28 to October 3, 1928.

Letters of invitation have already been forwarded to you and 207 other manufacturers.

Adequate space for the display of your products will be provided without cost, other than transportation charges. The public will be admitted free to the Airport for the Reliability Tour, the Exposition, your exhibit, night-flying demonstrations, a \$2,500 balloon race and other interesting features.

The flyer wants to know all about your product. He wants to see it demonstrated, to know its price, and to learn where and how to buy it.

And the flyer will attend! Pilots and mechanics are expected from all parts of the Continent.

You should be here with an attractive exhibit and intelligent representation, in order that your company may gain all advantages of this great opportunity at a time when all flying interests are assembled.

*Write immediately for
complete information*

DETROIT AVIATION SOCIETY
or
DETROIT BOARD OF COMMERCE
Detroit, Michigan

Please Write to Advertisers, Please Mention AVIATION

AIRPORTS AND AIRWAYS

Curtiss Field, Long Island, News

By Warren J. White

Inspired by J. E. Gifford's new gas-station, M. H. Merrill, Curtiss pilot at their Garden City Park, has organized and performed a dance destined to revolutionize the airways. It is called the "Multiple-Boomer," and as the name suggests, it is a dance in which the participants have only one leader. Casey Jones in his little名叫"Genie" seems almost to a dead stop before the lounge after setting the music. Quickly he pulls his Multiple-Boomer and毫不费力地跨上了舞池。

This remarkable dance can be neatly described and used in three short words— "Genie, Genie, Genie, Genie, Genie, Genie." In short it is a little, fast, gay, and Casey says, "Ask the man who runs Genie." This Merrill emphatically whispers, "We may need to sell them some day." It is sold to us the many Multiple-Boomer equipped ships leaving shore to give them a taste.

New England News Notes

By Peter Adams

The Register of Motor Vehicles, Frank A. Gondola, acting director of the Massachusetts State Police, and the Massachusetts State Firemen's Association, Inc., at their annual meeting held at the Boston Airport, the inspection which led to the revocation of the registration was made by Louis R. O'Brien, O.B.C., state aircraft inspector, and Louis A. E. Jones, J.S., member of the Massachusetts National Guard.

For some time past Boston has heard reports that Major Clarence B. Edwards, former commander of the Yankee Division and other prominent members of his organization, were in the process of forming a company to operate light-aircraft. One source has given the matter with the publication as Aug. 9 of the evidence that a conference had been held with President Coolidge following which it was announced that the company, known as the Aviation Corporation, had selected the base of the Los Angeles from the corporation for its principal purposes and that the plane contemplated a daily schedule between New York and Chicago to be started in 15 days.

According to the report the proposed plan of making money by ten cents or seventy-five dollars for the trip, if that proved successful by using the Los Angeles in the experimental stage, the company began to look toward a site in the eastern approach to Central Avenue, St. Louis, Denver and Omaha.

The three men used presentability manifested in connection with that development when the plan was last before President Coolidge and Secretary. However, Mr. George Edwards, Edward's father, former president of the U.S. Army, and Mr. Louis H. Hinman, Jr. It is understood that George D. Young, head of the corporation, which is reported as being organized for \$100 million dollars.

Mr. Young has since publicly stated that he will have no connection with the landing company.—Editor)

The Army showed a quick and successful response after the announcement of the formation of the company by Louis R. O'Brien, U.S.N.R.V., of the Naval Air Station, Key West, and Captain E. B. Thompson of the Naval Air Station, Key West, that the Navy Air Service, Inc., plan to land in the field regularly and the pilot must be inspection that they make a weekly or bi-weekly trip here and we expect soon with Dugan, which is running a service to Cincinnati and Columbus. Then if Chicago, Detroit, Indianapolis and other cities to us we will soon have the country covered with our bases. We are ready to do our part.

One local pilot wants to know, "Can I buy a plane or do I need to be a member, notified that "I would like to join, if I could keep one foot on the G— (you know the

rest)." If some one will think of a snappy answer this will advance aviation two years and save many a pilot from inaction. The author and of Gifford's pilot will come to him. He himself and in own a snappy ship, a pilot's uniform and go about purchasing equipment. He prepared until there was no hope to patch the wings and only a pair of even the belt in the suitcase. In may be pointed out the ship "The Aviator" is a good ship, but the author has a good ship and has stopped selling her now and started another one to do more and be happy to propose again. The word is these, if you wish to take it, and no change for using the title.

Also this adds up to the point that some one ought to think up and broadcast some signal so that fliers could arrive a pilot down to dinner. A person standing in the yard would be able to see a plane or to take off would be easily recognizable. The red and white would be a patchwork and the white chicken or something like

August 31, 1925

AIRPORTS

Indiana News

By E. M. (Tom) Thompson

After four years we are beginning to realize our dreams and yearn for. We have heretofore been satisfied with selling and buying. We have now come to the point where we are interested in the ground persons of the Boston Airport, particularly to Chief Mechanic Jack Hines, whose willing and expert services enabled the Boston Aero to make such a record while carrying out the regular flying program of the commercial tank work and yet have all three of our 35% on the base ready for flying again today.

The total time for all Naval and Military aviation is the vicinity of Boston the past week was 202 29 hrs., of which the Navy at Lexington had 78 hrs. 18 mins.

It has been just learned that Major, Mr. Gifford, has a large number of visitors. The latest to visit the Marine Field, where two years ago the Marine Bomber unit came, instead of Colonel Mitchell landed during their trip over Maine, has been leased by Robert L. Lovell, who is continuing a campaign to become the Northern New England Aviation Society of Maine. A charter has already been applied for. It is anticipated that the field will be handed over to him to practice speeches and banquets will be erected as soon as possible.

L. I. Sound
By F. R. Collier

During the past two weeks the Curtiss Meteorological Airplane Co. has effected daily delivery service, with the exception of Sunday, for the Design Engineering Farm at its daily duty and results sheet of Horace. This sheet usually leaves the garage on East St. at sheet 4:30 p.m. and immediately makes by truck to East St. and Hudson Hall at 4:30 p.m. It is just about the time when the sun is about to set. The farm has a small plane at the Lake Forestshire place for the starting farm's delivery truck there at 8:30 p.m., or on an average of one hour and forty minutes. Mr. Webster has arranged the delivery every night an spite of very bad roads and clouds weather when the poor poor visibility has forced down land machines which could not take the chance of crashing into trees.

The major machine has been used each day and the same pilot that is chosen by Mr. Webster must also fly through these surroundings the following morning regardless of weather conditions in order to be ready for the next evening flight up and all members of the station used who take care of it are informed. The elderly engine, a Ford, is now well over a 100 hr. run.

This company has also recently offered the following services: Dr. Wm. Thompson and friends to Oberlin Lake and return with Dr. Thompson's mother, Mr. Trichard, of the University Trust Company, with friends to Lake St. Louis and to New York, and friends to the West, etc. Mr. Thompson and his wife, Mrs. Thompson, have been invited to the 10th Annual Binghamton and Oyster Bay, H. A. and S. A. return to Witch Lake. Andie Pitter to Western and return. W. H. Vanderbilt and guests including Henry Workman, of the

Yacht Club of Port Huron, and the wharves will be open to him.

Travel Air "Customs Mode" Plane

A specially illustrated "Travel Air" has just been completed by the Klocke, Klocke company of that name for Von Hohenberg of Berlin, Germany.

The new machine has an Armstrong 6 engine equipped with electric starters and generator. The rear plane has the recognized Travel Air characteristics of slow leading, especially high tail off. The top speed is 110 m./hr., the cruising speed 90 m./hr. The climbing range 900 m. in 1 min.

For a recent flight of Von Hohenberg, "Travel Air" is being reconstructed

as a racing plane, which the prospective owner has ordered as a transportation vehicle for himself and family.



Travel Air biplane with Armstrong 6 engine, electric starters and generator completed for Von Hohenberg of Berlin, Germany.

INDEX TO ADVERTISERS

Atkins & Pollock, Ltd.	A	283
Aeroplane, The	B	284
Aircraft Development Co.	C	285
Aircraft Service Directors	D	285
Aircraft Supply Co.	E	285
Alexander Aircraft Co.	F	285
Anderson Aircraft Manufacturing Co.	G	285
B	H	286
Bristol Aeroplane Co., Ltd.	I	286
C	J	286
Carpenter, Ford A.	K	286
Classified Advertising	L	286
Cessna Aircraft Corp.	M	286
Currie Aeroplane & Motor Corp.	N	287
D	O	287
Detroit Aeroplane Co.	P	287
Detroit Aviation Society	Q	287
E	R	288
Elias & Bros., Inc.	S	288
G	T	288
Gary Flying School	U	288
G & O Manufacturing Co., The	V	288
H	W	288
Hawthorn Aircraft Mfg. Co.	X	288
Hesdell Mfg. Co.	Y	288
Hoff Dillard Aero Corp.	Z	288
I		289
Irvin, G. S.	J	289
J	K	289
Johnson Aircraft & Supply Co.	L	289
Johnson Motor Products Co.	M	289
L	N	289
Lambkin, Requirements	O	289
Lester, M.	P	289
Ludington Equipment Co., Inc.	Q	289
M	R	289
Martin, Glenn L., Co., The	S	289
Memorial Aircraft Co.	T	289
N	U	289
Noethrop, Marvin A.	V	289
O	W	289
Osgood Aircraft Works	X	289
P	Y	289
Park, Allen E.	Z	289
Perry Aircraft Mfg. Co.	A	290
Phelps Aircraft Products Co.	B	290
Powers Instrument Co.	C	290
H	D	290
Rutherford Aircraft Corporation	E	290
S	F	290
Southern Aeroplane, Inc.	G	290
Spalding Construction Co.	H	290
Standard Towing Co.	I	290
Standard Aeroplane Mfg. Co., The	J	291
T	K	291
Timson, Inc.	L	291
W	M	291
Walters Aero Co.	N	292
Warren, Edward P.	O	292
Where Is Flying	P	292
Woodruff, Wm. Co., J. W.	Q	292
Wright Engineering Co.	R	292
Wright Aeronautical Corp.	S	292
Y	T	292
Turkey Aircraft Co.	U	292
Z	V	292

Seven years devoted exclusively to the largest production of commercial aircraft in the U. S.

The New
SWALLOW
The Aristocrat of the Air

PRICE REDUCTION

Immediate Delivery

3-place OX5 Motor 4-place OXX6 Motor
\$2750. \$3150.

THE SWALLOW AIRPLANE MFG. CO.
WICHITA, KANS.

The Aeroplane

Published Weekly

175, Piccadilly, London, W.1
England

CHARLES GREY
Editor

Subscription Rates
for U.S.A.

1 year—\$8.50

Please Write to Advertisers, Please Mention AVIATION

The Background of American Aviation

RENEW OLD CONTACTS—
BUSINESS AND SOCIAL, MAKE MANY NEW ONES

in the Revised 1925 Edition of

Who's Who in American Aeronautics

READY SEPTEMBER 1 — \$2.00

200 new biographies, 200 pictures of the men who are making aviation history; biographies of all of those actively interested in flying—the leading engineers, organizers, Army and Navy officers, executives, pilots, civil and military.

Four thousand copies of the first edition published three years ago were sold. WHO'S WHO filled a real need and has proven to be one of the most essential reference books in the field.

Great changes in aircraft organizations and personnel have occurred in the past three years—these are all reflected in the new edition.

You need the new WHO'S WHO to keep pace with these changes during an era of rapid progress in commercial and military flying.

*Send in your orders now. The new edition of
Who's Who will be limited to what we consider to
be the total demand based upon advance orders.*

SIGN THE CONVENIENT COUPON:

GARDNER PUBLISHING CO.
225 Fourth Ave., New York.

Mail to address given below
AEROPLANE, at \$2.00, each
copy of WHO'S WHO IN AMERICAN
AERONAUTICS, at \$2.00, each
Amount to enter is enclosed.

NAME _____

ADDRESS _____

CITY _____ STATE _____

Wright 200 H.P. Aircooled Engines

OFFER THE FOLLOWING ADVANTAGES

to Air Mail Bidders

Cut the first cost of planes

The first cost of mail planes including new Wright Whirlwind J4 200HP engines is about half the average of the prices recently bid to the P.O. Dept. for mail planes with Liberties. Since the P.O. Dept. makes no guarantees on quantities of air mail the bidder must assume the probable average quantity of mail. A 600 lb. mail load with a Whirlwind is approximately 24,000 letters. If any of these branch lines average as much mail as this they should pay. If they average less why pay more for a large plane to run half empty?

Reduce quantity of planes and spare engines required

Spare planes and spare engines are one of the heaviest expenses of air mail transportation. The ease with which inspections, adjustments and minor repairs are made on Whirlwind engines reduces the quantity of spare engines and spare planes required. Every "stand by" plane and engine cuts into anticipated profits. Planes with Whirlwind engines are more profitable because they are ready to be in the air more of the time.

Insure regularity of service

The mail planes must be ready to leave on schedule time. The turn around time is short. It takes only an hour to change a cylinder or grind a valve in a Whirlwind. Servicing bearings and other parts is proportionately as fast. The mechanic can do almost any job required between runs and without taking engine from plane.

Cost less to operate

The low cost in time and labor for engine inspection and repairs, the excellent oil and fuel economy (sometimes less than 8 gal. per hr.), the small quantity and reasonable price of spare parts due to the unit construction all make the Whirlwind engines economical to operate.

DURABILITY

A stock Whirlwind engine flew over 100 hrs. at full throttle and full RPM without replacement or adjustment of a single part or loss of revs. This is the equivalent of 300 hrs. of normal part throttle flying. Many of the 16 Whirlwinds with the Huff Deland Dusters are over the 100 hr. mark carrying their 600 lbs. of dust with a hard zoom each time the cotton patch is crossed. No greater durability test could be given airplane engines than this daily grind with heavy loads, heat, rain, bad fields, dust, constant take-offs, and operating hundreds of miles from their repair bases. Durability can only be built into an engine or an automobile by constantly improving such parts as are found to give trouble. This is a

task of years. A stock production Whirlwind (then Lawrence) won the Marine Trophy at the Detroit Air Meet in 1922. Since then 4 new models have been made with hundreds of changes, most of them for durability.

Decrease liability of crashes

A corollary of engine durability is safety. Dependability next to low cost is the most important characteristic of any transportation equipment. The proved dependability of the Whirlwind engines is one of the best safeguards for safe flying. In the recent Hawaiian maneuvers one squadron of 18 Whirlwinds flew over 2,000 hours with only one forced landing and that due to a stoppage in the fuel tank line.

Give high performance

The saving in weight and resistance of the water radiator systems gives either better performance, higher ceilings, or MORE PAY LOAD.

Winter and Summer Flying

The air cooled Whirlwind engines are better for extreme hot weather flying. Many instances are on record when these air cooled in extremely hot weather were flying perfectly when water cooled could not fly because of boiling. In winter draining radiators, heating water, heated hangars are all obviated by the air cooled.

WARRANTY GUARANTEE

A rigid 90 day "new car warranty" goes with each of these commercial Whirlwind engines. This warranty when backed by a responsible company is a great measure of protection to commercial operators. This warranty has been and will be administered to give real protection.

Service to Customers

We assist our customers in servicing and learning their Whirlwind engines. If they have troubles we send our service men to learn the cause and correct it. This safeguards the purchaser and helps us continue the dependability development of these Whirlwinds. We keep three service men on the road instructing and assisting. When more are needed we will get them. Spare parts are readily obtainable.

With Whirlwind engines your problems are our problems. The Wright Co. can only grow as aviation grows. We will be as earnest a worker for the success of your line as you will be, for your success is our success. The advantage of using new engines, made by a strong company strengthened by an unbroken chain of 22 years' experience and which is working to make the Air Mail a National Success will be appreciated by all Air Mail Bidders.



AIR MAIL BIDDERS:—Write for Bulletin 8A which contains detailed specifications, power curves and full data for these Whirlwind J4 Engines. State the route for which you propose to bid, the probable number of planes you will use, etc.

WRIGHT AERONAUTICAL CORPORATION, PATERSON, N. J.